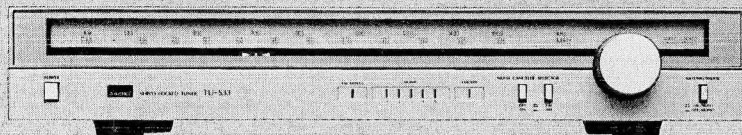


SERVICE MANUAL

SERVO LOCKED TUNER SANSUI TU-S33/S33L



• SPECIFICATIONS

FM Section

Tuning range 88 to 108 MHz

Usable sensitivity

Mono IHF 10.6 dBf (1.85 μ V: T100)

DIN 0.9 μ V

50 dB quieting sensitivity

Mono 16.5 dBf

Stereo 36.5 dBf

Signal to noise ratio at 65 dBf

Mono 81 dB

Stereo 76 dB

Distortion at 65 dBf

Mono less than 0.08 % at 100 Hz

less than 0.08 % at 1,000 Hz

less than 0.08 % at 6,000 Hz

Stereo less than 0.09 % at 100 Hz

less than 0.09 % at 1,000 Hz

less than 0.09 % at 6,000 Hz

Alternate channel selectivity (at 400 kHz)

. 60 dB

Capture ratio 1.0 dB

Image response ratio . . 50 dB (at 98 MHz)

Spurious response ratio . 75 dB (at 98 MHz)

Stereo separation 40 dB at 100 Hz

50 dB at 1,000 Hz

35 dB at 10,000 Hz

Frequency response

Stereo 30 to 15,000 Hz

+0.3 dB, -1.0 dB

Antenna input impedance

. 300 ohms balanced

75 ohms unbalanced

AM (MW, LW) Section

Tuning range MW: 530 to 1,600 kHz

LW: 150 to 350 kHz

<TU-S33L Only>

Usable sensitivity MW: 56 dB/m (630 μ V/m)

LW: 58 dB/m (794 μ V/m)

<TU-S33L Only>

Selectivity (± 9 kHz) . . 30 dB

Signal to noise ratio . . 45 dB

Distortion (at 30 % Modulation, 80 dB/m)

. less than 0.5 %

Image response ratio (MW)

. 45 dB at 1,000 kHz

IF response ratio (MW)

. 35 dB at 1,000 kHz

Others

Output voltage and impedance

OUTPUT 0.5 V/2.2 kilohms

Power requirements . . 220/240 V (50/60 Hz)

For U.S.A. and Canada

. 120 V (60 Hz)

Power consumption . . 14 W

Dimensions 430 mm (16-15/16") W

76 mm (3") H

272 mm (10-3/4") D

Weight 3.5 kg (7.7 lbs.) net

4.5 kg (9.9 lbs.) packed

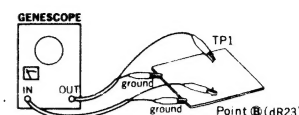
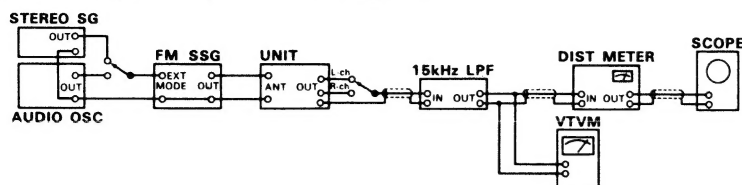
* Design and specifications subject to changes without notice for improvements.

Sansui

SANSUI ELECTRIC CO., LTD.

3. ADJUSTMENTS

3-1. FM Adjustment (See Top View on Page 5)



(1) FM IF, RF Adjustment and Dial Calibration

Note: 1. Selector FM
 2. Mode/Muting MONO/OFF
 3. Short between the TP5 (F-3659) and the ground.

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	98MHz ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point ① (eR30) & Earth DC Volt Meter	dT1 (F-3659)	Max. DC Volt (about DC 0.7V)	
2.	Discriminator Coil Adj. In case of using Genescope	1 No Input	—	Between dTP2 & dTP3 DC Volt Meter	dT2 (F-3659)	DC 0V ± 0.1V	
		2 Output 80dB, Genescope	TP1 (F-3659)	Between Point ② (dR23) & Earth	dT3, dT2 (F-3659)	Steep linearity of S curve. Make symmetrical S curve.	
	Discriminator Coil Adj. In case of using Dist meter	1 No Input		Between dTP2 & dTP3 DC Volt Meter	dT2 (F-3659)	DC 0V ± 0.1V	<ul style="list-style-type: none"> Repeat procedures as stated in 1 and 2. Since the dT1 has already adjusted, perform only a fine adjustment in this procedure.
		2 98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	OUTPUT L-CH or R-CH, Dist Meter	dT3, dT2 dT1 (F-3659)	Min. THD	
3.	88MHz Dial Calibration	88MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	OUTPUT L-CH or R-CH, VTVM & SCOPE	dL4 (F-3659)	Max. Output	<ul style="list-style-type: none"> Repeat procedures as stated in 3 and 4.
4.	108MHz Dial Calibration	108MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Same as above	dTC3 (F-3659)	Same as above	
5.	88MHz RF Adj.	88MHz ANT Input Minimum value with sine wave 1000Hz (100% MOD.), FM SSG	Same as above	Same as above	dL2, dL3 (F-3659)	Same as above	
6.	108MHz RF Adj.	108MHz ANT Input Minimum value with sine wave, 1000Hz (100% MOD.), FM SSG	Same as above	Same as above	dTC1, dTC2 (F-3659)	Same as above	

(2) FM STEREO Adjustment

1. FM/AM muting switch ON
 2. Mode/Muting AUTO/ON
 3. Noise canceler OFF

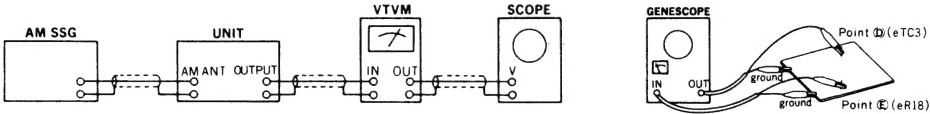
STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	PLL VCO Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz 9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG	ANT terminal 300Ω	Stereo indicator	dVR3 (F-3659)	Light indicator	Adjust the dVR3 within center of lighting level
	PLL VCO Adj. In case of using Freq.	98MHz ANT Input 65dBf (59.8dB), FM SSG, No MOD.	Same as above	Between dTP4 & Earth Freq. counter	dVR3 (F-3659)	19kHz ± 50Hz	

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
2.	Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	OUTPUT L-CH VTVM & SCOPE	—	Read this indication on VTVM	Confirm R → L-CH
				OUTPUT R-CH VTVM & SCOPE	dVR2 (F-3659)	−35dB from the indication above.	
3.	Muting level Adj.	98MHz ANT Input 23dBf (17.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	Stereo indicator or OUTPUT L-CH or R-CH VTVM & SCOPE	dVR1 (F-3659)	Stereo indicator turns ON or Output Signal comes out	

3-2. AM Adjustment (See Top View on Page 5)

Note: 1. Selector AM
2. Mode/Muting OFF

3. Connect the AM loop antenna to the AM antenna terminal and GND terminal.



(1) AM IF, RF Adjustment and MW AM Dial Calibration

Note: Band Selector MW

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Output 60dB, Genescope	Point D (eTC3)	Between Point E (eR18) & Earth	eCF1, eT2 (F-3659)	Max. Waveform	
2.	600kHz Dial Calibration	600kHz ANT Input 60dB, 400Hz (30% MOD.), AM SSG	ANT terminal	OUTPUT L-CH or R-CH VTVM & SCOPE	eT3 (F-3659)	Max. Output	● Repeat procedures as stated in 2 and 3.
3.	1400kHz Dial Calibration	1400kHz ANT Input 60dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC3 (F-3659)	Same as above	
4.	600kHz RF Adj.	600kHz ANT Input 40dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eT1 (F-3659)	Same as above	
5.	1400kHz RF Adj.	1400kHz ANT Input 40dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-3659)	Same as above	

(2) LW AM Dial Calibration (TU-S33L Only)

Note: Band Selector LW

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	170kHz Dial Calibration	170kHz ANT Input 60dB, 400Hz (30% MOD.), AM SSG	ANT terminal	OUTPUT L-CH or R-CH VTVM & SCOPE	eT4 (F-3659)	Max. Output	
2.	300kHz Dial Calibration	300kHz ANT Input 60dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC4 (F-3659)	Same as above	
3.	170kHz RF Adj.	170kHz ANT Input 40dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eT2 (F-3659)	Same as above	
4.	300kHz RF Adj.	300kHz ANT Input 40dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC2 (F-3659)	Same as above	

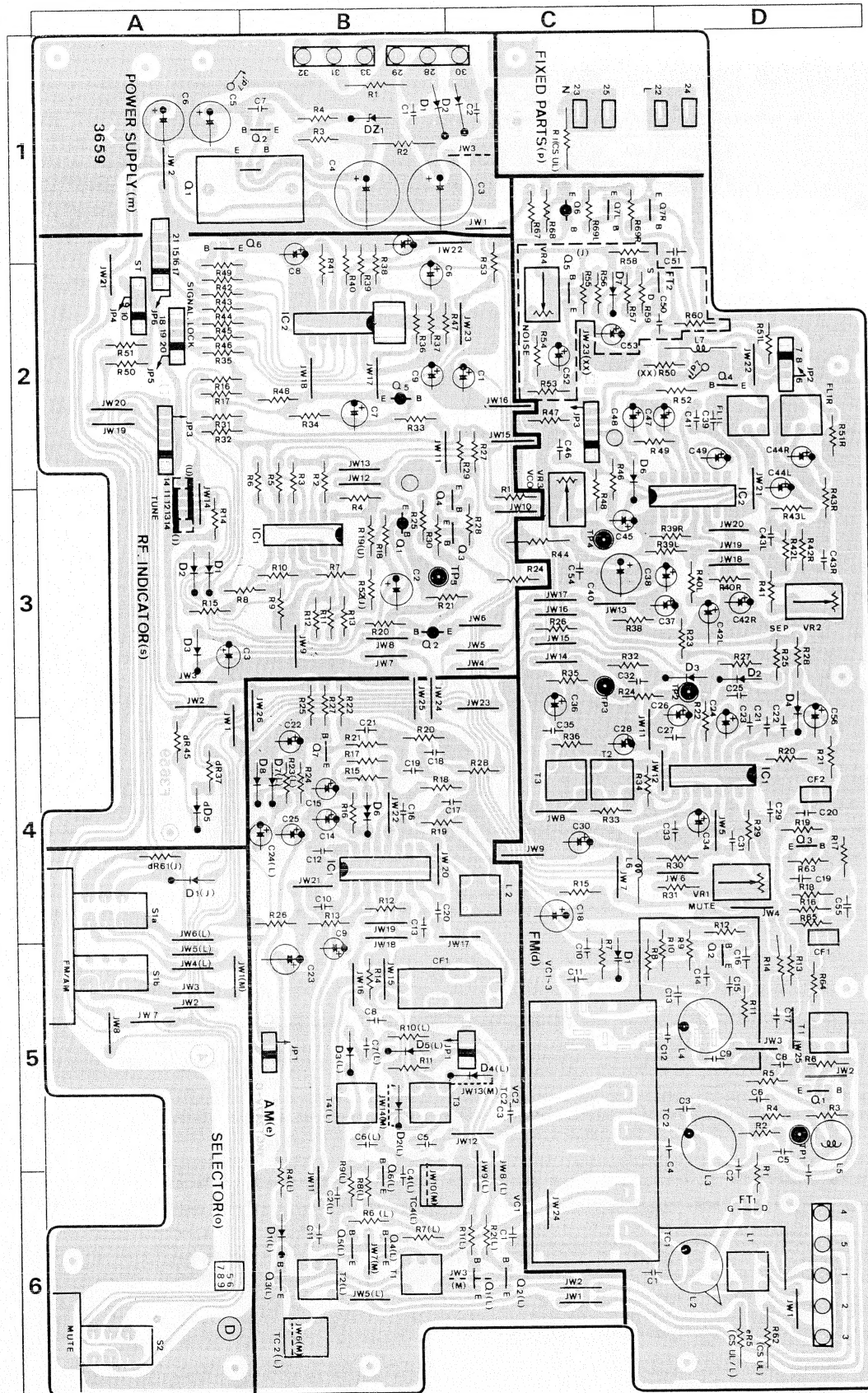
• Abbreviations •			
Equipment		Genescope	Others
AM FM Generator Oscilloscope		AM SSG	Antenna
AM Standard Signal Generator		FM SSG	Modulation
FM Standard Signal Generator		Stereo SG	Total Harmonic Distortion
FM Stereo Generator		Scope	
Oscilloscope		Audio Osc.	
Audio Oscillator		Dist. Meter	
Distortion Meter			

•Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors, which was appended previously to Sansui Manual.

4. PARTS LOCATION & PARTS LIST

4-1. F-3659 AM/FM RF, IF Circuit Board (Stock No. 00660301 = TU-S33/00660805 = TU-S33L)

Component Side



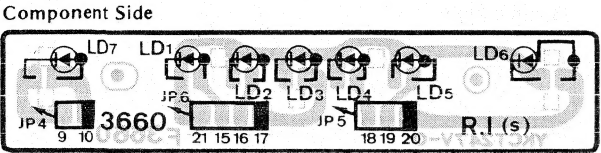
Parts List

Parts No.	Stock No.	Description
•Transistor		
dQ1	03063401	2SC1674
	or 07273601	2SC1923
dQ2	03069501	2SC668
dQ3	03069501	2SC668
dQ4	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
dQ6	07197001	2SA733A
	or 07194701	2SA1015
dQ7	03059501	2SC945
	or 07194801	2SC1815
•FET		
dFT1	03703701	2SK120
•IC		
dIC1	46052600	μPC1208
dIC2	46153600	μPC1235C
•Diode		
dD1	07299300	1S2236
dD2 ~ 6	03117600	1S2473
	or 46086000	1S1588
dVC1	46144100	Variable Capacitor
dCF1	07102210	Ceramic Filter
dCF2	07102210	Ceramic Filter
dLF1	07196400	Low Pass Filter
dL2	42007200	FM RF Coil
dL3	42103400	FM RF Coil
dL4	42204000	FM RF Coil
dL5	49002800	Inductor 1.0μH
dL6	42904600	Peaking Coil
dL7	42904600	Peaking Coil
dT1	42359300	FM IF Coil
dT2	46077600	FM IF Coil
dT3	46086900	FM IF Coil
dVR1	07241500	Semi Variable Resistor 50kΩ (B), mute
dVR2	07241700	Semi Variable Resistor 200kΩ (B), sep.
dVR3	07218000	Semi Variable Resistor 6.8kΩ (B), V.C.O.
dL1	46163700	Balun
•Transistor		
eQ7	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
•IC		
eIC1	03603900	HA1197
	or 03608000	LA1240
•Varistor		
eD6	03401500	MV-12
•Diode		
eD8	03117600	1S2473
	or 46086000	1S1588
eT1	46085900	AM RF Coil
eT3	46079000	AM OSC Coil

Parts No.	Stock No.	Description
eCF1	09103700	Ceramic Filter
eL2	42306200	AM IF Coil
•Transistor		
mQ1	03083902	2SD313
mQ2	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
•Diode		
mD1	03117700	10E-2
mD2	03117700	10E-2
•Zener Diode		
mDZ1	03159800	EQA01-14R
mR1	00179700	120Ω 1W N.I.R.
mR2	00183600	4.7Ω 1W N.I.R.
oS1	46164000	Push Switch, selector
oS3	46163900	Push Switch, mode/muting
•Transistor		
sQ1	07197001	2SA733A
	or 03012701	2SA999
sQ2	07197001	2SA733A
	or 03012701	2SA999
sQ3	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
sQ4	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
sQ5	07197001	2SA733A
	or 07194701	2SA1015
	or 03012701	2SA999
sQ6	03059501	2SC945
	or 07194801	2SC1815
	or 03068301	2SC2320
•IC		
sIC1	07205200	NJM2902N
	or 07258300	MB3614M
sIC2	03611600	LB1416
•Diode		
sD1	03117600	1S2473
	or 46086000	1S1588
sD2	03117600	1S2473
	or 46086000	1S1588
sD3	03117600	1S2473
	or 46086000	1S1588
<TU-S33L Only>		
•Transistor		
eQ1 ~ 4	46118801	2SC2878
•Diode		
eD1 ~ 5	03117600	1S2473
	or 46086000	1S1588
eD7	03117600	1S2473
	or 46086000	1S1588
eTC2	12301000	Trimmer Capacitor
eTC4	12301000	Trimmer Capacitor
eT2	46163600	LW RF Coil
eT4	07258200	LW OSC Coil

• The circuit boards, F-3660, F-3661 & F-3662 are not supplied as the assembled, the individual parts on the circuit boards, however are provided for orders.

4-2. F-3660 Indicator Circuit Board



Parts List		
Parts No.	Stock No.	Description
•Light Emitting Diode		
sLD1	46173900	SLP-270C, signal
sLD2	46173900	SLP-270C, signal
sLD3	46173900	SLP-270C, signal
sLD4	46173900	SLP-270C, signal
sLD5	46173900	SLP-270C, signal
sLD6	46174000	SLP-470C, lock
sLD7	46169300	SEL-1210S, stereo

4-3. F-3661 Output Terminal Circuit Board

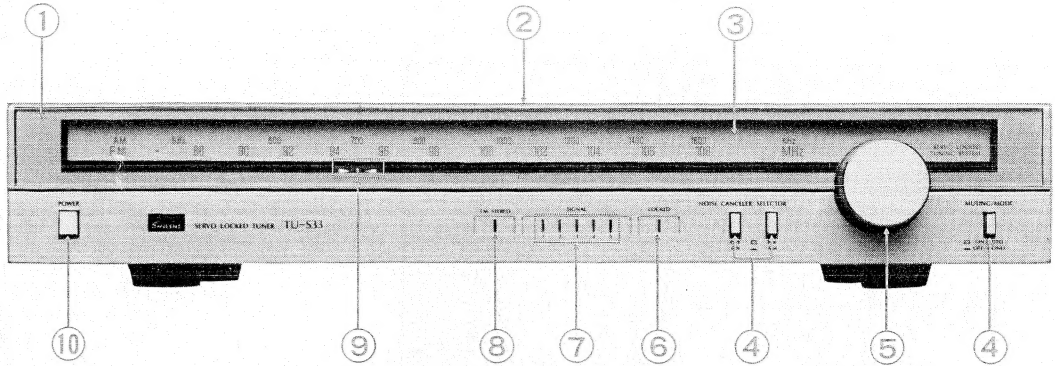
Parts List		
Parts No.	Stock No.	Description
	07249000	2P Output Terminal

4-4. F-3662 Power Switch Circuit Board

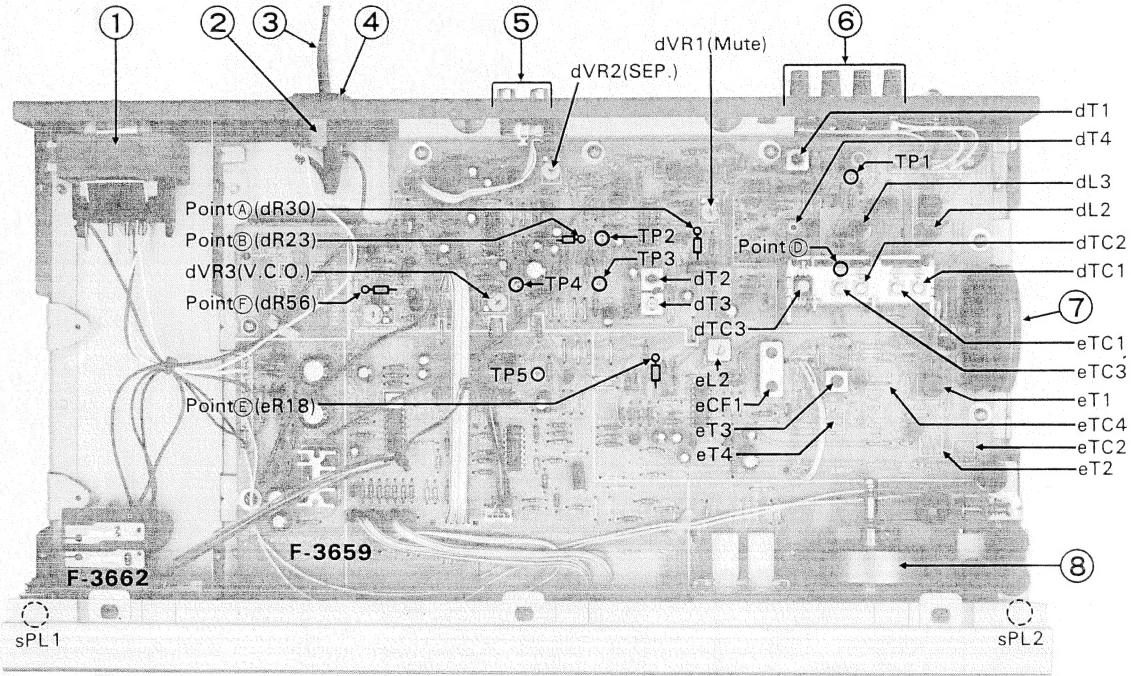
Parts List		
Parts No.	Stock No.	Description
pC1	00386100	0.0047μF 150V C.C.
pS1	46087300	Push Switch, power

5. OTHER PARTS

5-1. Front View



5-2. Top View



Parts List <Front View>

Parts No.	Stock No.	Description
1	07824500	Front Panel Ass'y <TU-S33·Silver>
	07824600	Front Panel Ass'y <TU-S33·Black>
	07824700	Front Panel Ass'y <TU-S33L·Black>
2	07823210	Bonnet <Silver·TU-S33 Only>
	07823310	Bonnet <Black>
3	07825800	Dial Scale <TU-S33>
	07826000	Dial Scale <TU-S33L>
4	07809500	Push Knob <Silver·TU-S33 Only>
	07809600	Push Knob <Black>
5	07824000	Knob <Silver·TU-S33 Only>
	07824100	Knob <Black>
6	46174000	SLP-470C LED, lock
7	46173900	SLP-270C LED, signal
8	46169300	SEL-1210S LED, stereo
9	07264700	LED Ass'y
10	07809700	Push Knob <Silver·TU-S33 Only>
	07809800	Push Knob <Black>

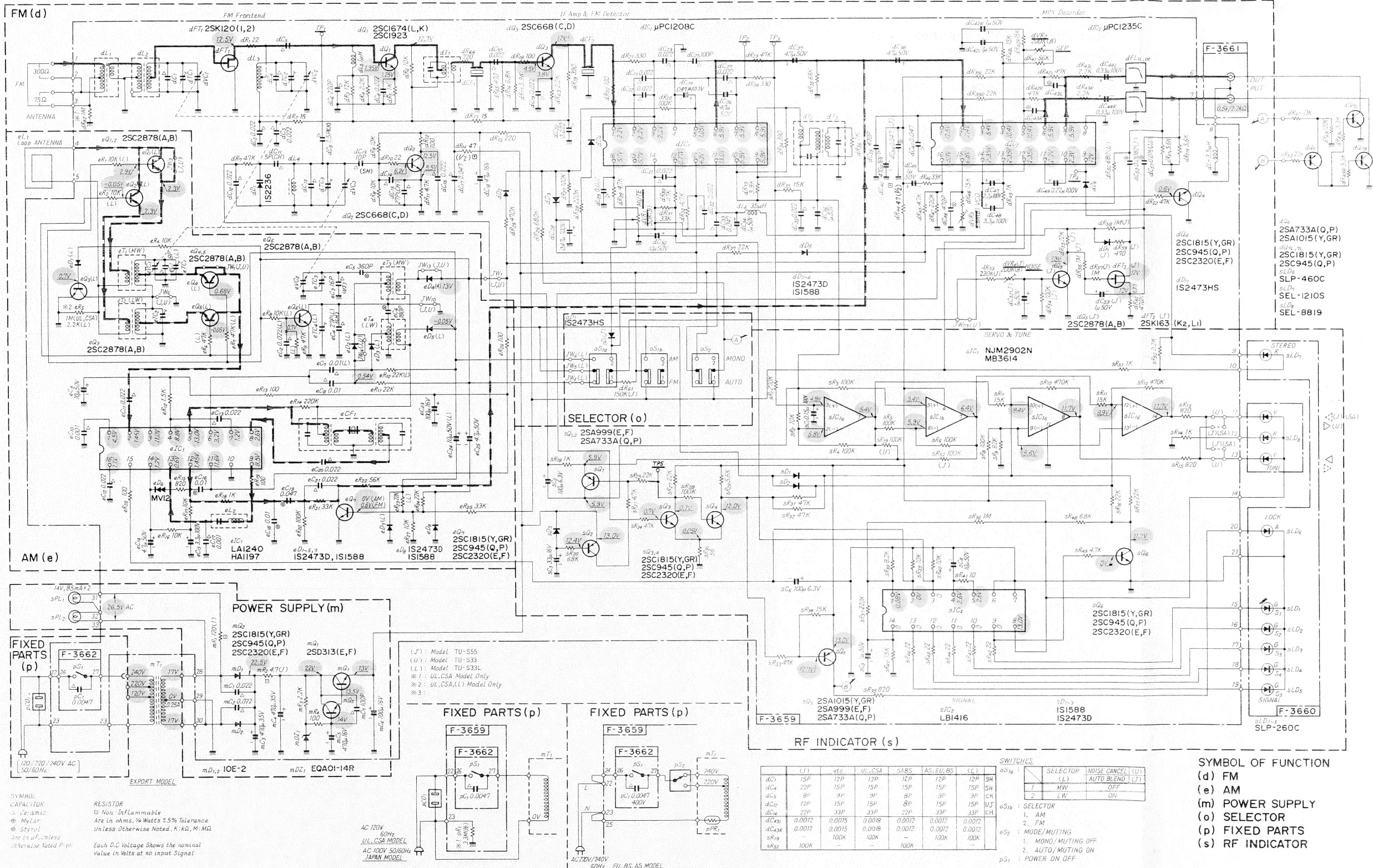
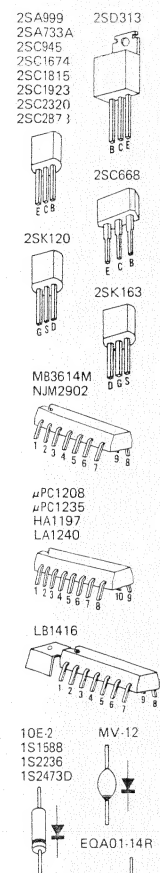
Parts List <Top View>

Parts No.	Stock No.	Description
1	15005601	Power Transformer <TU-S33>
	15005605	Power Transformer <TU-S33L>
2	07189600	AC Outlet
3	38004700	AC Cord
4	39106000	Strain Relief
5	07249000	2P Output Terminal Board
6	22104000	Antenna Terminal Board
7	61467220	Pulley
8	07823100	Tuning Unit
sPL1	46168400	Pilot Lamp, 14V 85mA
sPL2	46168300	Pilot Lamp, 14V 85mA

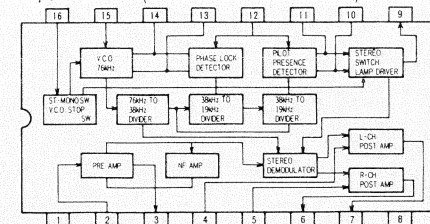
• Abbreviations

C.R. Carbon Resistor	E.L. Low Leak Electrolytic Capacitor
S.R. Solid Resistor	E.B. Bi-Polar Electrolytic Capacitor
Ca.R. Cement Resistor	E.BL. Low Leak Bi-Polar Electrolytic Capacitor
M.R. Metal Film Resistor	
F.R. Fusing Resistor	Ta.C. Tantalum Capacitor
N.I.R. Non-Inflammable Resistor	F.C. Film Capacitor
C.C. Ceramic Capacitor	M.P. Metalized Paper Capacitor
C.T. Ceramic Capacitor, Temperature Compensation	P.C. Polystyrene Capacitor
E.C. Electrolytic Capacitor	G.C. Gimmic Capacitor

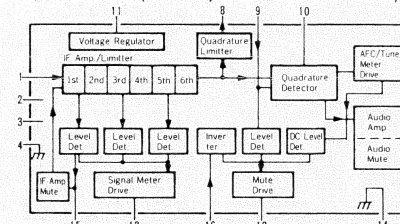
6. SCHEMATIC DIAGRAM



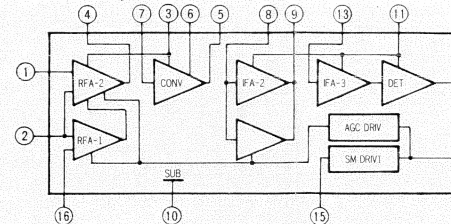
• μPC1235C (FM Stereo Decoder IC)



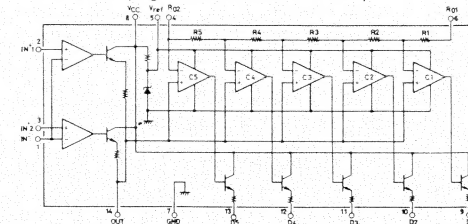
• μPC1208C (IF Amp & FM Detector IC)



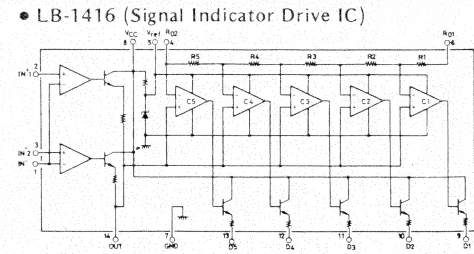
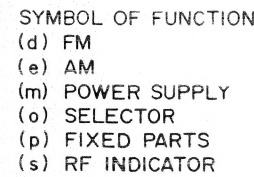
• HA1197 (AM Tuner IC)



• LB-1416 (Signal Indicator Drive IC)



25A099
 25A733A
 25C945
 25C1674
 25C1815
 25C1923
 25C2330
 25C2877
 25D313
 25C668
 25K120
 25K163
 M83614M
 NJM2902
 μ PC1208
 μ PC1235
 HA1197
 LA1240
 LB1416
 10E-2
 151588
 152336
 152473D
 MV-12
 EQA01-14R



FM Signal Line
AM Signal Line

A

B

C

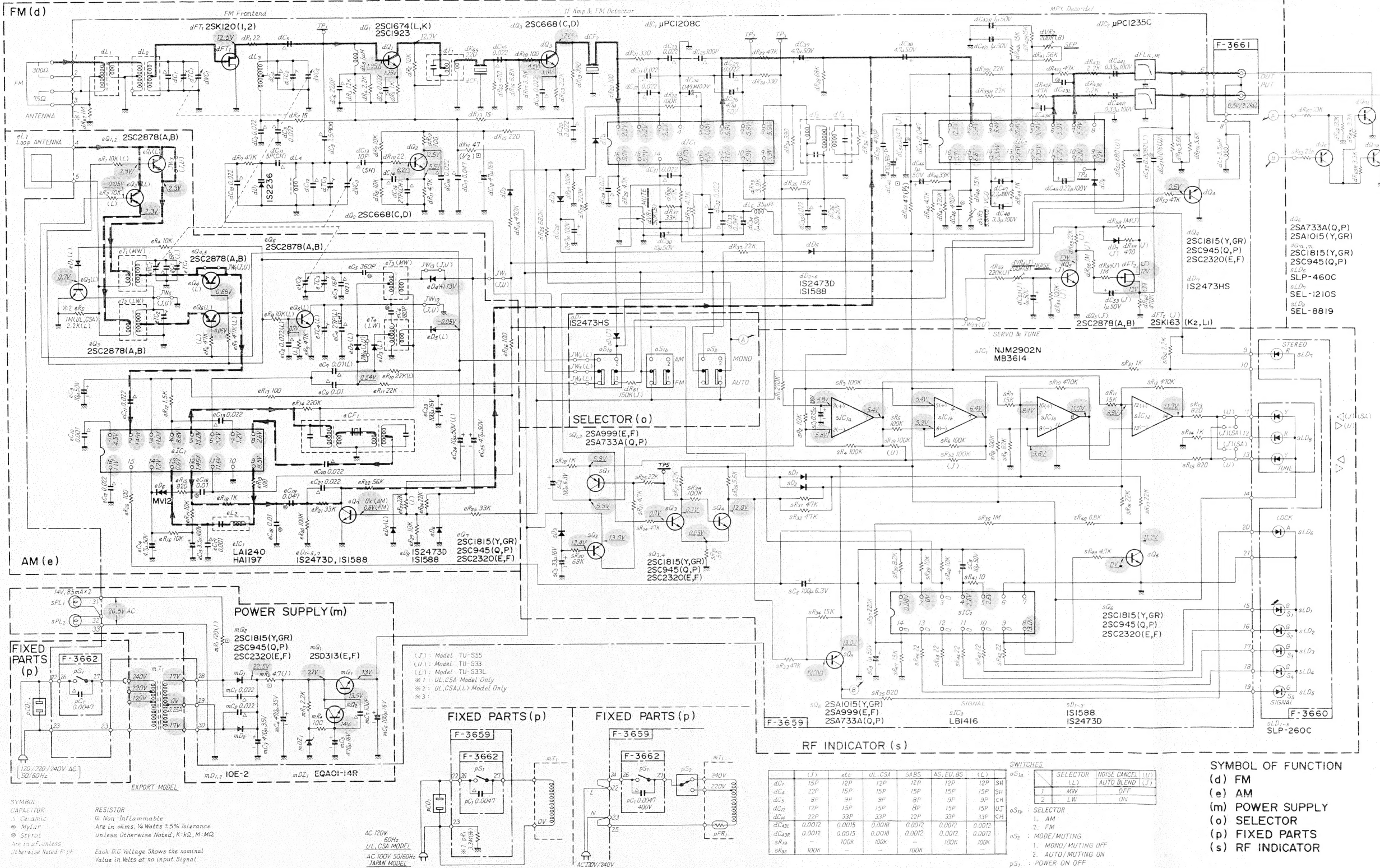
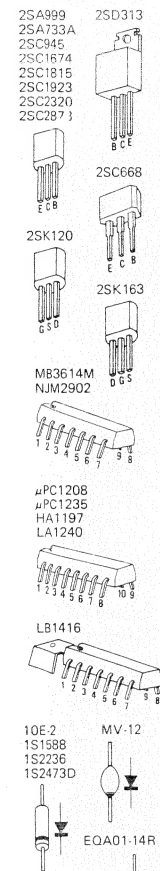
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E

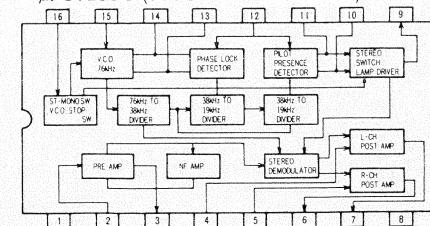
F

G

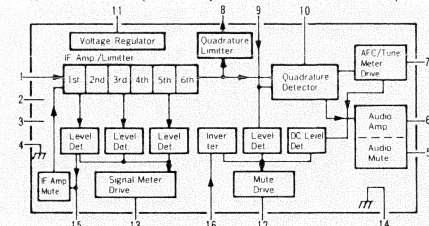
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6. SCHEMATIC
DIAGRAM

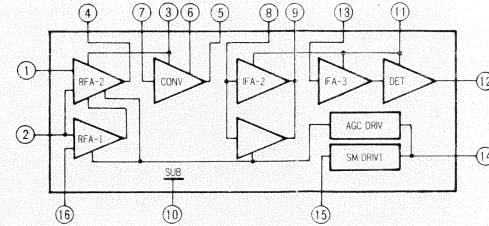
• μPC1235C (FM Stereo Decoder IC)



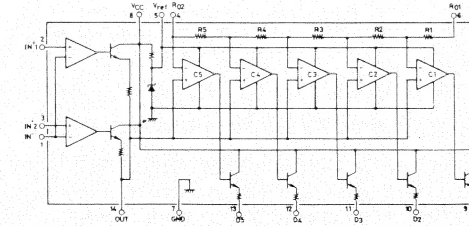
• μPC1208C (IF Amp & FM Detector IC)



• HA1197 (AM Tuner IC)



• LB-1416 (Signal Indicator Drive IC)



7. THREADING OF DIAL CORD

7-1. Replacement of Dial Cord

Thread the dial cord in numerical order from ① to ⑭ as Fig. 7-1.
Close the variable capacitor completely.

* Dial Cord (0.5 mmφ) <Stock No. 60360520>

7-2. Attachment of Dial Pointer

1. Close the variable capacitor completely.

2. Set the dial pointer to the start-point as Figs. 7-1, 7-2.

• Confirm that the dial pointer runs smoothly on the dial scale by turning the tuning shaft.

• Move the position A of the clip pushing the dial thread in the arrow direction and then pull it upward to remove the clip.
- * Clip (Dial Pointer) <Stock No. 07654600>

Fig. 7-1

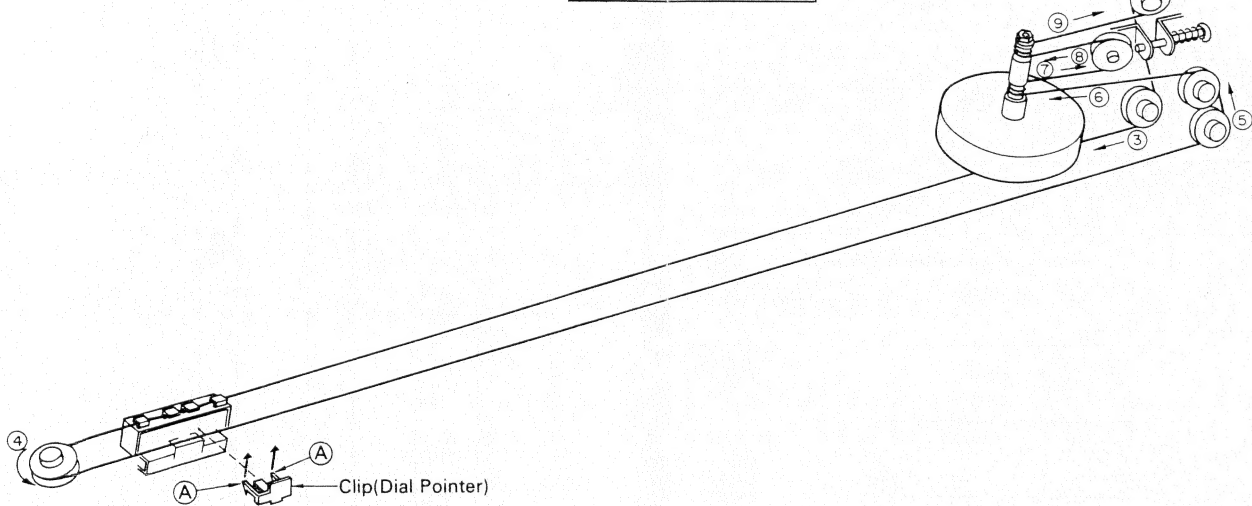
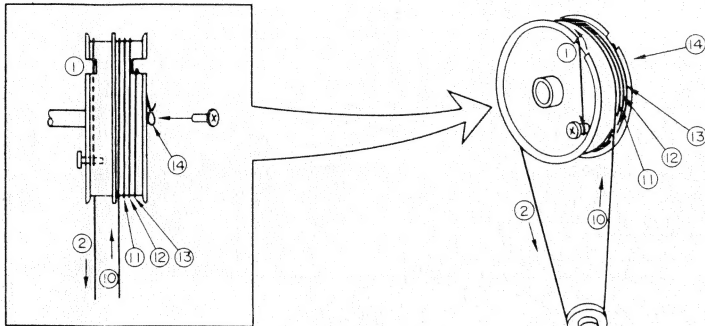
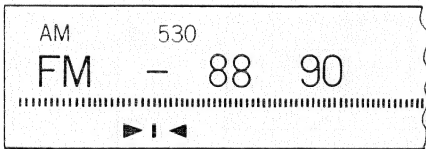
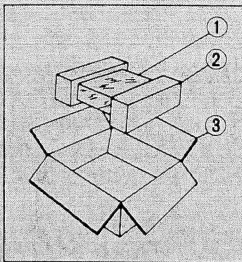


Fig. 7-2



8. PACKING LIST

Parts No.	Stock No.	Description
1	07599500	Vinyl Cover
2	07827200	Styrofoam Packing
3	07827110	Carton Case <TU-S33, Silver>
	07827010	Carton Case <TU-S33, Black>
	07826810	Carton Case <TU-S33L, Black>



9. ACCESSORY LIST

Stock No.	Description
46141900	Operating Instruction <TU-S33>
46142000	Operating Instruction <TU-S33L>
38103300	PJP Cord
46051700	FM Antenna
07198900	AM Loop Antenna
07563000	Loop Antenna Holder



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